

U.S. Patent Application Serial No. 10/087,913
PRELIMINARY AMENDMENT
TO RCE filed September 16, 2004

REMARKS

As indicated above, this is a Preliminary Amendment for the Request for Continued Examination (RCE) for the above-captioned patent application.

Claims 21 - 34 are currently pending in this patent application, claims 1 - 9 and 18 - 20 having been canceled, and claims 10 - 17 having been withdrawn. Among the currently pending claims, claims 21 and 27 are independent claims.

The specification and claims 21 - 25 and 27 have been amended in order to more particularly point out, and distinctly claim the subject matter to which the applicants regard as their invention. The applicants respectfully submit that no new matter has been added.

At the outset, the applicants thank the Examiner for indicating (in line 3, page 5 of the Office Action dated April 28, 2004) that independent claim 21 is allowable over the prior art of record.

Claim 21 stands rejected however under 35 USC §112, second paragraph, for the specific reasons set forth in the fifth full paragraph on page 2 of the April 28, 2004 Action. The applicants respectfully request reconsideration of this rejection.

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Claim 21 has been amended in order to adopt the Examiner's suggestion by reciting the phrase "metal in elemental form."

Accordingly, the withdrawal of the outstanding indefiniteness rejection under 35 USC §112, second paragraph, is in order, and is therefore respectfully solicited.

As to the merits of this case, the following rejections are set forth:

1) claims 18 - 20 and 22 - 34 stand rejected under 35 USC §102(b) or, in the alternative, under 35 USC §103(a) based on Wrezel (U.S. Patent No. 5,674,326) ; and

2) claims 18 and 22 - 26 stand rejected under 35 USC §102(b) or, in the alternative, under 35 USC §103(a) based on Yamaguchi (U.S. Patent No. 5,962,133)¹.

The applicants respectfully request reconsideration of these rejections.

First, as noted above, claims 18 - 20 have been canceled; thus, the outstanding rejections of claims 18 - 20 is now moot.

¹ As indicated in the fifth full paragraph on page 4 of the April 28, 2004 Action, claims 19 - 21 and 27 - 34 are allowable over the Yamaguchi reference.

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Second, independent claim 21 is said to be allowable over the prior art of record, and claims 22 - 26 now solely depend on allowable claim 21. Thus, the outstanding rejections of claims 22 - 26 are now similarly moot.

Third, as to the rejection of claims 27 - 34 under 35 USC §102(b) or, in the alternative, under 35 USC §103(a) based on Wrezel, the applicants respectfully submit that significant structural arrangements of the applicants' claimed conductive composition, as now set forth in independent claim 27, includes conductive composition being comprised of "conductive particles" defined in claim 27, and a "resin composition" comprising a thermosetting resin having a curing temperature lower than 230°C and/or a thermoplastic resin having a melting point lower than 230°C that cures and/or solidifies after a heating treatment at a temperature lower than 230°C to act as an adhesive material.

Such claimed structural arrangements result in unique and significant or beneficial effects in that an adhesive composition layer can be formed at a temperature lower than 230°C that comprises alloy regions of a base metal and a coating metal, and cured and/or solidified resin regions so that an element of an LSI (or the like) and a substrate (or the like) can be bound without thermally damaging the element, and the adhesive composition layer thus formed has sufficient adhesion strength and heat conductivity.

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Wrezel is silent as to the above-discussed significant structural arrangements of the claimed conductive composition, as now set forth in claim 27. Accordingly, it is not possible to reach the above-described unique and significant or beneficial effects of the claimed invention from Wrezel's composition. More particularly, Wrezel only discloses a solder paste and a flux as an adjuvant, and is intrinsically different from the "resin composition" of the applicants' instant claimed invention.

Wrezel's flux includes a dicarboxylic acid as an activator, and is a solution having a low viscosity that is used for the purpose of removing oxide films on the surfaces of metal particles contained in the paste for soldering and of an electrode or the like to which the paste is applied, thereby, improving the wettability of the solder paste to the electrode or the like. Wrezel's flux does not remain in the final composition since it is removed by washing after the heat treatment for the soldering.

To the contrary, the applicants' claimed "resin composition" comprises a thermosetting resin and/or a thermoplastic resin, and cures and/or solidifies after a heat treatment to act as an adhesive to physically bind objects to be bound. The applicants' claimed "resin composition" remains in the composition after the heat treatment and acts as a material to enhance the adhesion strength.

With respect to the claim limitation of the temperature being "lower than 230°C" for the thermosetting and thermoplastic resins of the "resin composition," the applicants respectfully submit

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that among the metals constituting a base material and a coating material of conductive particles, Sn has the lowest melting point; i.e., about 230°C (231.97°C). When, *arguendo*, the resin composition is heated to a temperature that is higher than the melting point of the materials for constituting the conductive particles, alloy regions to be obtained by a eutectic reaction between the base material metal and the coating metal is not sufficiently formed from the conductive particles, and the effects of the applicants' present claimed invention will not be manifested fully. It is accordingly necessary to limit the heating temperature to a range lower than 230°C so as to fully show the effects of the applicants' instant claimed invention.

Therefore, the thermosetting/thermoplastic resins used in combination with the conductive particles should be curable/meltable at a heating temperature lower than 230°C, indicating that the curing/melting temperature limitation of "lower than 230°C" is indispensable for the thermosetting/thermoplastic resins.

It is respectfully submitted that Wrezel does not teach the above-discussed claimed conductive composition, and the advantages or benefits derived therefrom.

Accordingly, since not all of the claimed elements, as now set forth in independent claim 27, are found in exactly the same situation and united in the same way to perform the identical function in the Wrezel composition, there can be no anticipation of the claimed invention under 35

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USC §102(b) based on the teachings of Wrezel.

Moreover, based on the above, a person of ordinary skill in the art would not have found the applicants' claimed invention, as now set forth in claim 27, obvious under 35 USC §103(a) based on Wrezel.

Furthermore, claims 28 - 34 depend on independent claim 27, and further limit the scope of claim 27. Thus, at least for the reasons discussed above with respect to claim 27, claims 28 - 34 should now be similarly allowable.

Accordingly, the withdrawal of the outstanding rejection under 35 USC §102(b) or, in the alternative, under 35 USC §103(a) based on Wrezel (U.S. Patent No. 5,674,326) is in order, and is therefore respectfully solicited.


In view of the aforementioned amendments and accompanying remarks, claims, as amended, are in condition for allowance, which action, at an early date, is requested.

If, for any reason, it is felt that this application is not now in condition for allowance, the Examiner is requested to contact the applicants' undersigned attorney at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

In the event that this paper is not timely filed, the applicants respectfully petition for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees which may be due with respect to this paper, to Deposit Account No. 01-2340.

Respectfully submitted,

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